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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,087	03/18/2004	Mitsuru Hasegawa	PHCF-04015	4164

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EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
05/29/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,087	HASEGAWA ET AL.	
	Examiner	**Art Unit**	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,8,9,11-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,8,9,11-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Breif filed on February 14, 2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3-6, 8, 9, 11-14, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukunaga; Yukio et al. (US 6176929 B1). Fukunaga teaches a semiconductor film formation device (Figure 1A), comprising: a reaction vessel (10; Figure 1A) that includes a gas flow path to allow a source gas to pass through, a substrate (W; Figure 1A) mount site (W/12; Figure 1A) upon which to mount a substrate (W; Figure 1A) being provided in the gas flow path inside the reaction vessel (10; Figure 1A), said substrate (W; Figure 1A) mount site (W/12; Figure 1A) being located on an inside surface of said reaction vessel (10; Figure 1A) along a first side of said reaction vessel (10; Figure 1A); a heater (not shown; column 5, lines 15-30) that is disposed along only a single side of said reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on said first side along which the substrate (W; Figure 1A) mount site (W/12; Figure 1A) inside the reaction vessel (10; Figure 1A) is mounted; a cooling device (16; Figure 1A) that is disposed along only a single side of said reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on a second side substantially directly opposite to the heater (not shown; column 5, lines 15-30), said cooling device (16; Figure 1A) controlling an internal temperature of the reaction vessel (10; Figure 1A) in a first section of the gas flow path where the substrate (W; Figure 1A) mount site (W/12; Figure 1A) is located; and a thermal conductivity adjusting member (top piece of 16; Figure 1A) that is disposed between the reaction vessel (10; Figure 1A) and the cooling device (16; Figure 1A), wherein the thermal conductivity adjusting member (top piece of 16; Figure 1A) allows the first section along the gas flow path where the substrate (W; Figure 1A) mount site (W/12; Figure 1A) is located to have a thermal conductivity different from that of a second section along the gas flow path, in order to lower a thermal diffusion effect of the source gas in the first section thereby forming a temperature

gradient in the reaction vessel (10; Figure 1A) by providing a difference in temperature between regions of the reaction, vessel.

Fukunaga further teaches:

i. The semiconductor film formation device (Figure 1A) according to claim 1, wherein: the first section comprises an interspace (M; Figure 1A) formed between the reaction vessel (10; Figure 1A) and the thermal conductivity adjusting member (top piece of 16; Figure 1A), as claimed by claim 3

ii. The semiconductor film formation device (Figure 1A) according to claim 3, wherein: the interspace (M; Figure 1A) has a varying height along the gas flow path, as claimed by claim 4

iii. The semiconductor film formation device (Figure 1A) according to claim 1, wherein: the first section comprises a material having a thermal conductivity that is different from a thermal conductivity of a material of the second section, as claimed by claim 5

iv. A semiconductor film formation device (Figure 1A), comprising: a reaction vessel (10; Figure 1A) that includes a gas flow path to allow a source gas to pass through and a substrate (W; Figure 1A) mount site (W/12; Figure 1A) on an inside surface of the reaction vessel (10; Figure 1A) to mount a substrate (W; Figure 1A) in the gas flow path, said substrate (W; Figure 1A) mount site (W/12; Figure 1A) being located on a first side of said reaction vessel (10; Figure 1A); a heater (not shown; column 5, lines 15-30) that is disposed along only one side of the reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on said first side of the reaction vessel (10; Figure 1A) as the substrate (W; Figure 1A) mount site (W/12; Figure 1A) is located, the heater (not

shown; column 5, lines 15-30) thereby being close to the substrate (W; Figure 1A) mount site (W/12; Figure 1A); and a cooling device (16; Figure 1A) to control an internal temperature of the reaction vessel (10; Figure 1A) in a section of the gas flow path wherein the substrate (W; Figure 1A) mount site (W/12; Figure 1A) is located, the cooling device (16; Figure 1A) disposed along only one side of the reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on a second side of said reaction vessel (10; Figure 1A) substantially directly opposite to said first side of said reaction vessel (10; Figure 1A) that the heater (not shown; column 5, lines 15-30) is located, wherein a wall thickness of the reaction vessel (10; Figure 1A) is smaller in the section along the gas flow path where the substrate (W; Figure 1A) mount site (W/12; Figure 1A) is located, thereby forming an interspace (M; Figure 1A) between the reaction vessel (10; Figure 1A) and the cooling device (16; Figure 1A) to lower a thermal diffusion effect of the source gas in the section of the gas flow at the location of the substrate (W; Figure 1A) mount site (W/12; Figure 1A), thereby forming a temperature gradient in the reaction vessel (10; Figure 1A) by providing a difference in temperature between regions of the reaction vessel (10; Figure 1A), as claimed by claim 6

v. The semiconductor film formation device (Figure 1A) according to claim 6, wherein: the interspace (M; Figure 1A) has a height that varies along the gas flow path, as claimed by claim 8

vi. A semiconductor film formation device (Figure 1A), comprising: a reaction vessel (10; Figure 1A) that includes a gas flow path to allow a source gas to pass through and a substrate (W; Figure 1A) mount site (W/12; Figure 1A) provided in the gas flow path to

mount a substrate (W; Figure 1A), said substrate (W; Figure 1A) mount site (W/12; Figure 1A) being located on an inside surface of said reaction vessel (10; Figure 1A) along a first side thereof; a heater (not shown; column 5, lines 15-30) that is disposed along only a single side of the reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) along said first side and close to the substrate (W; Figure 1A) mount site (W/12; Figure 1A); a cooling device (16; Figure 1A) that is disposed along only a single side of the reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on a second side of said reaction vessel (10; Figure 1A), said second side being substantially directly opposite to the first side of said reaction vessel (10; Figure 1A) along which said heater (not shown; column 5, lines 15-30) is located, the cooling device (16; Figure 1A) controlling an internal temperature of the reaction vessel (10; Figure 1A) in a vicinity of the substrate (W; Figure 1A) mount site (W/12; Figure 1A); a plate member that is disposed along said second side of said reaction vessel (10; Figure 1A) opposite to the substrate (W; Figure 1A) mount site (W/12; Figure 1A) in the gas flow path; and a thermal conductivity adjusting member (top piece of 16; Figure 1A) that is disposed between the cooling device (16; Figure 1A) and the plate member, wherein the thermal conductivity adjusting member (top piece of 16; Figure 1A) provides a first section along the gas flow path with a thermal conductivity different from a second section along the gas flow path, to lower a thermal diffusion effect of the source gas in the first section, thereby forming a temperature gradient in the reaction vessel (10; Figure 1A) by providing a difference in temperature between regions of the reaction vessel (10; Figure 1A), as claimed by claim 9

vii. The semiconductor film formation device (Figure 1A) according to claim 9 wherein: the first section comprises an interspace (M; Figure 1A) formed between the reaction vessel (10; Figure 1A) and the thermal conductivity adjusting member (top piece of 16; Figure 1A), as claimed by claim 11

viii. The semiconductor film formation device (Figure 1A) according to claim 11, wherein: the interspace (M; Figure 1A) has a height that varies along the gas flow path, as claimed by claim 12

ix. The semiconductor film formation device (Figure 1A) according to claim 11, wherein: the first section comprises a material whose thermal conductivity is different from that of a the second section, as claimed by claim 13

x. A semiconductor film formation device (Figure 1A), comprising: a reaction vessel (10; Figure 1A) that includes a gas flow path to allow a source gas to pass through and a substrate (W; Figure 1A) mount site (W/12; Figure 1A) provided in the gas flow path to mount a substrate (W; Figure 1A), said substrate (W; Figure 1A) mount site (W/12; Figure 1A) being located on an inside surface of said reaction vessel (10; Figure 1A) on a first side thereof; a heater (not shown; column 5, lines 15-30) that is disposed along only a single side of said reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) along said first side and close to the substrate (W; Figure 1A) mount site (W/12; Figure 1A); a cooling device (16; Figure 1A) that is disposed along only a single side of said reaction vessel (10; Figure 1A), outside of the reaction vessel (10; Figure 1A) on a second side thereof, said second side being substantially directly opposite to the first side along which the heater (not shown; column 5, lines 15-30) is disposed, to control an

internal temperature of the reaction vessel (10; Figure 1A) in a vicinity of the substrate (W; Figure 1A) mount site (W/12; Figure 1A); and a plate member that is disposed along said second side, opposite to the substrate (W; Figure 1A) mount site (W/12; Figure 1A) in the gas flow path, wherein the reaction vessel (10; Figure 1A) includes a wall thickness that is smaller in a first section along the gas flow path than a wall thickness in a second section, such as to thereby form an interspace (M; Figure 1A) between the reaction vessel (10; Figure 1A) and the cooling device (16; Figure 1A) to lower a thermal diffusion effect of the source gas in the first section, thereby forming a temperature gradient in the reaction vessel (10; Figure 1A) by providing a difference in temperature between regions of the reaction vessel (10; Figure 1A), as claimed by claim 14

xi. The semiconductor film formation device (Figure 1A) according to claim 14, wherein: the interspace (M; Figure 1A) has a varying height along the gas flow path, as claimed by claim 16

xii. The semiconductor film formation device (Figure 1A) according to claim 1, wherein said gas flow path is substantially parallel with an exposed upper surface of said substrate (W; Figure 1A) as mounted upon said substrate (W; Figure 1A) mount site (W/12; Figure 1A), as claimed by claim 17

xiii. The semiconductor film formation device (Figure 1A) according to claim 6, wherein said gas flow path is substantially parallel with an exposed upper surface of said substrate (W; Figure 1A) as mounted upon said substrate (W; Figure 1A) mount site (W/12; Figure 1A), as claimed by claim 18

xiv. The semiconductor film formation device (Figure 1A) according to claim 9, wherein said gas flow path is substantially parallel with an exposed upper surface of said substrate (W; Figure 1A) as mounted upon said substrate (W; Figure 1A) mount site (W/12; Figure 1A), as claimed by claim 19

xv. The semiconductor film formation device (Figure 1A) according to claim 14, wherein said gas flow path is substantially parallel with an exposed upper surface of said substrate (W; Figure 1A) as mounted upon said substrate (W; Figure 1A) mount site (W/12; Figure 1A), as claimed by claim 20

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792